No. 8800139

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Tennessee Agricultural Experiment Station

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF eighteen YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT.

E UNITED STATES SEED OF THIS VARIETY (1) SHALL BE SOLD BY VARIETY NAME ONLY AS OF CERTIFIED SEED AND (2) SHALL CONFORM TO THE NUMBER OF GENERATIONS S BY THE OWNER OF THE RIGHTS. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

[*Waived, except that this waiver shall not apply to breeder seed, foundation seed, labeling requirements, and blending limitations.]

SOYBEAN

'TN 4-86'

In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D. C. this 30th day of December in the year of our Lord one thousand nine hundred and eighty-eight.

Attest:

Kenneth A. Evans
Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

Richard E. Lyng
Secretary of Agriculture

APPROVAL EXPIRES 4-30-85

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

(Instructions on reverse)

FORM APPROVED: OMB NO. 0581-0055

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF APPLICANT(S)
Dr. Fred L. Allen, Soybean Breeder

2. TEMPORARY DESIGNATION
TN 4-86

3. VARIETY NAME
TN 4-86 RLS 10/28/88

4. ADDRESS *(Street and No. or R.F.D. No., City, State, and Zip Code)*
Dept. of Plant & Soil Science
P.O. Box 1071
Univ. of Tennessee Knoxville, TN 37901-1071

5. PHONE *(Include area code)*
615-974-7221

FOR OFFICIAL USE ONLY

PVPO NUMBER
8800139

6. GENUS AND SPECIES NAME
Glycine max L.

7. FAMILY NAME *(Botanical)*
Leguminosae

FILING
DATE
May 2, 1988
TIME
1:30 ☑ A.M. ☑ P.M.

8. KIND NAME
Soybean

9. DATE OF DETERMINATION
1-16-85

FEES RECEIVED
AMOUNT FOR FILING
$ 1800 00
DATE
May 2 1988
AMOUNT FOR CERTIFICATE
$ 200 00
DATE
October 27, 1988

10. IF THE APPLICANT NAMED IS NOT A "PERSON," GIVE FORM OF ORGANIZATION *(Corporation, partnership, association, etc.)*
TENNESSEE AGRICULTURAL EXPERIMENT STATION
P.O. BOX 1071 UNIV. OF TENNESSEE
KNOXVILLE, TN 37901-1071

11. IF INCORPORATED, GIVE STATE OF INCORPORATION

12. DATE OF INCORPORATION

13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS

Tenn. Crop Improvement Association
2640-C Nolensville Rd.
Nashville, TN 37211
Attn: Mr. Joe Dudney

or

Tennessee Foundation Seeds, Inc.
412 Murfreesboro Rd.
Nashville, TN 37210 Attn: Mr. Jimmy Rader

PHONE *(Include area code)*: 615-242-0467

14. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED

a. ☒ Exhibit A, Origin and Breeding History of the Variety *(See Section 52 of the Plant Variety Protection Act.)*
b. ☒ Exhibit B, Novelty Statement.
c. ☒ Exhibit C, Objective Description of Variety *(Request form from Plant Variety Protection Office.)*
d. ☒ Exhibit D, Additional Description of Variety.
e. ☒ Exhibit E, Statement of the Basis of Applicant's Ownership.

15. DOES THE APPLICANT(S) SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED? *(See Section 83(a) of the Plant Variety Protection Act.)* ☒ Yes *(If "Yes," answer items 16 and 17 below)* ☐ No RLS 10/28/88

16. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS?
☒ Yes ☐ No

17. IF "YES" TO ITEM 16, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED?
☒ Foundation ☒ Registered ☒ Certified

18. DID THE APPLICANT(S) PREVIOUSLY FILE FOR PROTECTION OF THE VARIETY IN THE U.S.?
☐ Yes *(If "Yes," give date)*
☒ No

19. HAS THE VARIETY BEEN RELEASED, OFFERED FOR SALE, OR MARKETED IN THE U.S. OR OTHER COUNTRIES?
US - Tennessee Foundation Seeds, Inc. Breeder Seed BREEDER SEED WAS GIVEN TO TO BE INCREASED AS ~~AS~~ October 1986 FOUNDATION SEED IN SPRING OF 1987. SEED WAS SOLD TO CERTIFIED SEED GROWERS AS FOUNDATION CLASS SEED IN THE SPRING OF 1988. RLS 10/3/88
☒ Yes *(If "Yes," give names of countries and dates)*
☐ No

20. The applicant(s) declare(s) that a viable sample of basic seeds of this variety will be furnished with the application and will be replenished upon request in accordance with such regulations as may be applicable.

The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in Section 41, and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act.

Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.

SIGNATURE OF APPLICANT
Fred L. Allen
DATE
4-20-88

SIGNATURE OF APPLICANT
Don R. Rader
DATE
4-22-88

FORM WA-470 (7-84) (Edition of 3-84 is obsolete.)

EXHIBIT A

8800139

TN 4-86 (experimental designation: TN83-7)

1. Basis for requesting release

There is a substantial demand in Tennessee for early maturing (group IV) soybean cultivars which have good seed quality, shatter resistance as well as resistance to the soybean cyst nematode (SCN). None of the currently available cultivars in maturity group IV has the combination of traits mentioned above. On the otherhand, TN83-7 has the combination of traits mentioned above. It is a high yielding variety with resistance to races 3 and 4 of SCN, moderate resistance to peanut root-knot nematode, has excellent shatter resistance, good quality seed, and good lodging resistance.

2. History and pedigree

TN83-7 traces to a single plant selection in the F_6 generation from a cross of Bedford x Crawford. The line was composited in the F_7 generation and entered into preliminary yield tests in 1983. It has been in two or more yield tests each year in the state and the Southeastern region since 1983. TN83-7 was screened for nematode resistance in the field at the Martin Experiment Station and in the greenhouse at West Tennessee Experiment Station at Jackson by Dr. Lawrence Young.

3. Description

TN83-7 produces tall plants that have indeterminate growth habit and tawny pubescence. The plants mature 3-5 days later than the cultivar Mitchell and 5-7 days earlier than the cultivar Essex. Plants of TN83-7 have purple flowers and the seed are yellow with black hila and have an intermediate seed coat luster.

4. Performance data

In the three years of testing in the absence of cyst nematodes in Tennessee and surrounding states TN83-7 has consistently outyielded standard cultivars of similar maturity such as Mitchell (Tables 1, 2 and 5), Fayette (Tables 1 and 5), Douglas (Tables 3 & 4), and Pershing (Tables 3 & 4). TN83-7 ranked number 1 in average yield out of 36 strains tested in the USDA Regional Preliminary IV-S Soybean Yield Tests at 8 locations involving 8 different states in 1985. In comparison to the two check cultivars in the USDA test, TN83-7 averaged approximately 3.5 bu/A higher yield than Pershing and 9.5 bu/A higher yield than Douglas (Table 3). In three different tests over 2 years in SCN infested soils, TN83-7 has averaged E 7 bu/A higher yields than the SCN resistant cultivar, Fayette and ~ 9 bu/A higher yield than the SCN susceptible cultivar, Mitchell (Table 5). In addition to high yield potential and other desirable agronomic characteristics, TN83-7 has good levels of protein and oil in the seed.

5. Availability of Breeder Seed

Approximately 1.5 bushels of Breeder Seed are available for increase. Breeder Seed of the variety will be maintained by the University of Tennessee Agricultural Experiment Station.

Copy

JLL 8800139
10-22-87

THE UNIVERSITY OF TENNESSEE
INSTITUTE OF AGRICULTURE

Department of Plant and Soil Science
P. O. Box 1071
Knoxville, TN 37901-1071
(615) 974-7101

MEMORANDUM

EXHIBIT A - 12pgs

DATE: October 19, 1987

TO: Joe Dudney, Secretary/Manager,
Tennessee Crop Improvement Association

FROM: Fred L. Allen, Soybean Breeder FLA
Department of Plant and Soil Science, U. of Tennessee

RE: Off-Type Plants in TN 4-86

This memorandum is in relation to the "off-type" plants (tall, late, tawny pubescent plants and grey pubescent plants) in the new cultivar TN 4-86. Tn 4-86 is the increase of a single plant selection in the F_4 and again in the F_6 generation and subsequently tested as TN 83-7. It was uniform for all characteristics including pubescence (tawny) color, maturity (late September) and plant height (44-48 inches). However, the Breeder Seed lot contained some tawny pubescent plants which were approximately 8-10" taller and 10 days to 2 weeks later in maturity than the cultivar TN 4-86 should be. Also, there were occasional grey pubescent plants which showed up in the Foundation Seed lots. It is not clear as to whether the origin of these off-types is the result of an outcross or a mechanical mix.

The amount of off-type plants in the foundation seed is not expected to be more than .027%. Breeder seed lots have been grown and rogued during the 1987 season to reestablish breeder seed which should be free of such mixtures.

pc: Dr. J.E. Foss
Dr. J.I. Sewell
Mr. J. Rader

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EXHIBIT B

STATEMENT OF NOVELTY

TN 4-86 is most similar in appearance to Mitchell.

TN 4-86 differs from Mitchell in reaction to soybean cyst nematode (SCN), shatter resistance, and visual seed quality as follows:

	TN 4-86	Mitchell
SCN race 3	Resistant	Susceptible
SCN race 4	Resistant	Susceptible
Shattering Score	1.5+	4.5+
Seed Qual. Score	1.5+	3.5+

+Score 1-5; 1= excellent; 5= very poor

FORM APPROVED: OMB NO. 0581-0055

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
LIVESTOCK, MEAT, GRAIN & SEED DIVISION
PLANT VARIETY PROTECTION OFFICE
BELTSVILLE, MARYLAND 20705

EXHIBIT C
(Soybean)

OBJECTIVE DESCRIPTION OF VARIETY
SOYBEAN (Glycine max L.)

NAME OF APPLICANT(S)	TEMPORARY DESIGNATION	VARIETY NAME
TENNESSEE AGRICULTURAL EXPERIMENT STATION	TN83-7	TN 4-86

ADDRESS *(Street and No., or R.F.D. No., City, State, and Zip Code)*
P.O. BOX 1071
UNIVERSITY OF TENNESSEE
KNOXVILLE, TN 37901-1071

FOR OFFICIAL USE ONLY
PVPO NUMBER
8800139

Choose the appropriate response which characterizes the variety in the features described below. When the number of significant digits in your answer is fewer than the number of boxes provided, place a zero in the first box when number is 9 or less (e.g., [0][9]). Starred characters ★ are considered fundamental to an adequate soybean variety description. Other characters should be described when information is available.

1. SEED SHAPE:

[2]

1 = Spherical (L/W, L/T, and T/W ratios = < 1.2)
2 = Spherical Flattened (L/W ratio > 1.2; L/T ratio = < 1.2)
3 = Elongate (L/T ratio > 1.2; T/W = < 1.2)
4 = Elongate Flattened (L/T ratio > 1.2; T/W > 1.2)

★ **2. SEED COAT COLOR: (Mature Seed)**

[1] 1 = Yellow 2 = Green 3 = Brown 4 = Black 5 = Other *(Specify)* _____

3. SEED COAT LUSTER: (Mature Hand Shelled Seed)

[1] 1 = Dull ('Corsoy 79'; 'Braxton') 2 = Shiny ('Nebsoy'; 'Gasoy 17')

★ **4. SEED SIZE: (Mature Seed)**

[1][3] Grams per 100 seeds

★ **5. HILUM COLOR: (Mature Seed)**

[6] 1 = Buff 2 = Yellow 3 = Brown 4 = Gray 5 = Imperfect Black 6 = Black 7 = Other *(Specify)* _____

★ **6. COTYLEDON COLOR: (Mature Seed)**

[1] 1 = Yellow 2 = Green

★ **7. SEED PROTEIN PEROXIDASE ACTIVITY:**

[ ] 1 = Low 2 = High

★ **8. SEED PROTEIN ELECTROPHORETIC BAND:**

[ ] 1 = Type A ($SP1^a$) 2 = Type B ($SP1^b$)

★ **9. HYPOCOTYL COLOR:**

[3] 1 = Green only ('Evans'; 'Davis') 2 = Green with bronze band below cotyledons ('Woodworth'; 'Tracy')
3 = Light Purple below cotyledons ('Beeson'; 'Pickett 71')
4 = Dark Purple extending to unifoliate leaves ('Hodgson'; 'Coker Hampton 266A')

★ **10. LEAFLET SHAPE:**

[2] 1 = Lanceolate 2 = Oval 3 = Ovate 4 = Other *(Specify)* _____

11. LEAFLET SIZE:

[2] 1 = Small ('Amsoy 71'; 'A5312') 2 = Medium ('Corsoy 79'; 'Gasoy 17')
3 = Large ('Crawford'; 'Tracy')

12. LEAF COLOR:

[2] 1 = Light Green ('Weber'; 'York') 2 = Medium Green ('Corsoy 79'; 'Braxton')
3 = Dark Green ('Gnome'; 'Tracy')

★ **13. FLOWER COLOR:**

[2] 1 = White 2 = Purple 3 = White with purple throat

★ **14. POD COLOR:**

[1] 1 = Tan 2 = Brown 3 = Black

★ **15. PLANT PUBESCENCE COLOR:**

[2] 1 = Gray 2 = Brown (Tawny)

16. PLANT TYPES:

[2] 1 = Slender ('Essex'; 'Amsoy 71') 2 = Intermediate ('Amcor'; 'Braxton')
3 = Bushy ('Gnome'; 'Govan')

★ **17. PLANT HABIT:**

[3] 1 = Determinate ('Gnome'; 'Braxton') 2 = Semi-Determinate ('Will')
3 = Indeterminate ('Nebsoy'; 'Improved Pelican')

★ **18. MATURITY GROUP:**

[ ][7] 1 = 000 2 = 00 3 = 0 4 = I 5 = II 6 = III 7 = IV 8 = V
9 = VI 10 = VII 11 = VIII 12 = IX 13 = X

★ **19. DISEASE REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)**

BACTERIAL DISEASES:

★ [2] Bacterial Pustule *(Xanthomonas phaseoli* var. *sojensis)*

★ [0] Bacterial Blight *(Pseudomonas glycinea)*

★ [0] Wildfire *(Pseudomonas tabaci)*

FUNGAL DISEASES:

★ [0] Brown Spot *(Septoria glycines)*

Frogeye Leaf Spot *(Cercospora sojina)*

★ [0] Race 1 [0] Race 2 [0] Race 3 [0] Race 4 [0] Race 5 [ ] Other *(Specify)* _____

[0] Target Spot *(Corynespora cassiicola)*

[0] Downy Mildew *(Peronospora trifoliorum* var. *manshurica)*

[0] Powdery Mildew *(Microsphaera diffusa)*

★ [0] Brown Stem Rot *(Cephalosporium gregatum)*

[2] Stem Canker *(Diaporthe phaseolorum* var. *caulivora)*

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19. DISEASE REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant) (Continued)

FUNGAL DISEASES: (Continued)

★ [0] Pod and Stem Blight *(Diaporthe phaseolorum* var; *sojae)*

[2] Purple Seed Stain *(Cercospora kikuchii)*

[0] Rhizoctonia Root Rot *(Rhizoctonia solani)*

Phytophthora Rot *(Phytophthora megasperma* var. *sojae)*

★ [0] Race 1 [0] Race 2 [0] Race 3 [0] Race 4 [0] Race 5 [0] Race 6 [0] Race 7

[0] Race 8 [0] Race 9 [0] Other *(Specify)* _____

VIRAL DISEASES:

[0] Bud Blight (Tobacco Ringspot Virus)

[0] Yellow Mosaic (Bean Yellow Mosaic Virus)

★ [0] Cowpea Mosaic (Cowpea Chlorotic Virus)

[0] Pod Mottle (Bean Pod Mottle Virus)

★ [0] Seed Mottle (Soybean Mosaic Virus)

NEMATODE DISEASES:

Soybean Cyst Nematode *(Heterodera glycines)*

★ [0] Race 1 [0] Race 2 [2] Race 3 [2] Race 4 [ ] Other *(Specify)* _____

[0] Lance Nematode *(Hoplolaimus Colombus)*

★ [1] Southern Root Knot Nematode *(Meloidogyne incognita)*

★ [0] Northern Root Knot Nematode *(Meloidogyne Hapla)*

[2] Peanut Root Knot Nematode *(Meloidogyne arenaria)*

[0] Reniform Nematode *(Rotylenchulus reniformis)*

[ ] OTHER DISEASE NOT ON FORM *(Specify):* _____

20. PHYSIOLOGICAL RESPONSES: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)

★ [0] Iron Chlorosis on Calcareous Soil

[ ] Other *(Specify)* _____

21. INSECT REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)

[1] Mexican Bean Beetle *(Epilachna varivestis)*

[0] Potato Leaf Hopper *(Empoasca fabae)*

[ ] Other *(Specify)* _____

22. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED.

CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
Plant Shape	MITCHELL	Seed Coat Luster	BEDFORD
Leaf Shape	FORREST	Seed Size	"
Leaf Color	"	Seed Shape	"
Leaf Size	"	Seedling Pigmentation	MITCHELL

23. GIVE DATA FOR SUBMITTED AND SIMILAR STANDARD VARIETY: Paired Comparison Data

VARIETY	NO. OF DAYS MATURITY	PLANT LODGING SCORE	CM PLANT HEIGHT	LEAFLET SIZE		SEED CONTENT		SEED SIZE G/100 SEEDS	NO. SEEDS/ POD
				CM Width	CM Length	% Protein	% Oil		
Submitted TN 4-86	135	2	116			40.5	21.9	13	2.7
DOUGLAS Name of Similar Variety	133	2	96			41.5	21.1	18	2.7

PUBLICATIONS USEFUL AS REFERENCE AIDS FOR COMPLETING THIS FORM:

1. Caldwell, B.E., ed. 1973. Soybeans: Improvement, Production, and Uses. Amer. Soc. Agron. Monograph No. 16.
2. Buttery, B.R. and R.I. Buzzell. 1968. Peroxidase activity in seeds of soybean varieties. Crop Sci., 8: 722-725.
3. Hymowitz, T. 1973. Electrophoretic analysis of SBTI-A_2 in the USDA soybean germplasm collection. Crop Sci., 13: 420-421.
4. Payne, R.C. and L.F. Morris. 1976. Differentiation of soybean cultivars by seedling pigmentation patterns. J. Seed Technol. 1: 1-19.

Office of Communications, Institute of Agriculture, The University of Tennessee

THIS MANUSCRIPT PAPER is for your convenience in preparing a proper manuscript for publication. Please follow these instructions:

1) Try to keep copy either flush with or within the guidelines.
2) Double-space all lines, including heads. Leave no extra space between paragraphs.
3) Indent first line only of each paragraph.
4) Underline any words that should be italicized.
5) Submit one carbon copy or xerox copy along with the ribbon copy for editorial office needs.

EXHIBIT D

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REGISTRATION OF 'TN 4-86' SOYBEAN

'TN 4-86' soybean [Glycine max (L.) Merr.] (Reg. no. _ _ _) (PI) was developed by the Tennessee Agricultural Experiment Station and released in 1986 because of its high seed yields and resistance to races 3 and 4 of the soybean cyst nematode (SCN)(Heterodera glycine Ichinohe). TN 4-86 is the increase from a F_7 line from the cross, 'Bedford' x 'Crawford'. A single pod was harvested from each plant in the F_2 and F_3 generations and composited for growing bulk F_3 and F_4 populations. Single plant selections were made in the F_5 and F_6 generations and the line was composited in the F_7 generation. Resistance to SCN was determined by evaluating plants of the F_7 line in the greenhouse for reaction to races 3 and 4 and on a field site infested with race 4. TN 4-86 was evaluated in Tennessee yield tests from 1983 through 1986 and in the Uniform Soybean Tests, Southern Region, in 1985 (Preliminary IV-S) and 1986 (Uniform IV-S), under the designation Tn83-7.

TN 4-86 is a Maturity Group IV, indeterminate cultivar which has tawny pubescence, purple flowers, tan pod walls, and yellow seed with black hila. It is approximately 20 cm taller and matures approximately 2 days later than 'Douglas'. The seed holding and seed quality of TN 4-86 are superior to that of Douglas. TN 4-86 has been equal to Douglas in seed yield in the absence of SCN infestation. When grown in soils infested with race 4 of SCN, it has averaged approximately 23% higher in seed yield than 'Fayette', which is also resistant to SCN races 3 and 4. Seed of TN 4-86 has averaged 0.8%

Accepted for publication in Crop Science in 1988

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higher in oil content (21.9%) and 1.0% lower in protein (40.5%) than seed of Douglas.

In addition to resistance to races 3 and 4 of SCN, TN 4-86 has moderate resistance to the common root-knot nematode [Meloidogyne incognita (Kofoid & White) Chitwood] and to the peanut root-knot nematode [M. arenaria (Neal) Chitwood]. Also, it has resistance to bacterial pustule [Xanthomonas phaseoli (E. F. Smith) Dowson var. sojensis (Hedges) Starr & Burkh.] and moderate resistance to purple seed stain [Cercospora kikuchii (T. Matsu. & Tomoyasu) Gardner].

Breeder seed was released in May 1986 to Tennessee Foundation Seeds, Inc. The Tennessee Agricultural Experiment Station will be responsible for the maintenance of breeder seed.

F. L. ALLEN, D. M. PANTER, AND L.D.YOUNG(1)

References and Notes

1. Associate professor and senior research assistant, respectively, Dep. of Plant and Soil Sci., Univ. of Tennessee, Knoxville, TN 37901 and Nematologist, USDA, West Tennessee Experiment Station, Jackson, TN 38301. Registration by the Crop Sci. Soc. of Am. Accepted -- ---- 1988.

Stop

EXHIBIT D 8800139

'TN 4-86' D/S

Table 1 - Yield comparisons of TN83-7 with other standard cultivars averaged across locations within the state for individual years, 1983-85.

Variety	n =	1983 2	1984 2	1985 4	1985 9
		bu/A			
<TN83-7> 'TN 4-86'		29.5	48.8	44.8	45.1
MITCHELL		----	----	39.1	42.0
FAYETTE		----	40.3	34.8	----
ESSEX		28.5	----	----	----

Table 2 - Yield comparisons of TN83-7 with Mitchell at 5 locations in the State Variety Trials (Tennessee; early maturing varieties) in 1985.

Variety	Location					Overall Mean
	KPS	HRES	PES	MES	AMES	
	bu/A					
<TN83-7> 'TN 4-86'	55.3	50.1	33.4	57.5	30.5	45.4
Mitchell	49.0	47.6	42.6	48.7	36.6	44.9

EXHIBIT D 8800139

Table 3 - General summary of yield and agronomic characteristics of 'TN 4-86' <TN83-7> and two standard varieties grown in the USDA Regional Preliminary Group IV-S Soybean Tests in 1985.

Variety	Seed yield n=8	Mat index	Ht.	Percent Oil	Percent Protein	Shattering†	M. arenaria†	SCN race 3	SCN race 4
	bu/A	mo/da	in.	------%	------	(1-5)	(1-5)		
'TN 4-86' <TN83-7>	44.3	9-30	38	22.0	41.9	1.0	2.5	R	R
Douglas	34.9	9-29	27	21.3	41.8	1.0	4.0	S	S
Pershing	40.7	10-5	26	19.5	42.5	2.0	5.0	S	S

†Score of 1 = highly resistant; 5 = susceptible

Table 4 - Average seed yield, by location, for TN83-7 and two standard varieties grown in the USDA Regional Preliminary Group IV-S Soybean Tests in 1985.

Variety	Queens-town, MD	Warsaw, VA	Portage-ville, MO	Keiser AR	Stone-ville, MS	Ottawa, KS	Prince-ton, KY	Tipton-ville, TN
	bu/A							
'TN 4-86' <TN83-7>	51.6	43.4	37.9	61.1	26.4	40.8	54.0	39.0
Douglas	39.0	36.6	32.1	43.3	13.0	41.0	53.4	20.7
Pershing	45.2	41.3	30.7	58.7	24.2	35.9	56.6	32.8

8800139

EXHIBIT D

'TN 4-86' RJS

Table 5 - Yield comparisons of<TN83-7>with a SCN resistant (Fayette) and a SCN susceptible cultivar (Mitchell) when grown on SCN infested soils in Tennessee in 1984 and 1985.

Variety	Martin 1984	Martin 1985	Knoxville 1985	Overall Mean
	bu/A			
'TN 4-86' <TN83-7>	43.0	40.1	34.2	39.3
FAYETTE	38.5	27.0	33.1	32.0
MITCHELL	----	31.1	28.3	29.7

EXHIBIT E

STATEMENT OF APPLICANT OWNERSHIP -- 'TN 4-86' SOYBEAN

The breeder, Fred L. Allen, is an Associate Professor in the Department of Plant & Soil Science, University of Tennessee, Agricultural Experiment Station, Knoxville, Tennessee. The research which led to the development of the soybean cultivar, TN 4-86, was conducted by the breeder, as described in other attached exhibits, within the research framework of an authorized project of the Tennessee Agricultural Experiment Station. One of the objectives of the research program is to develop highly productive, early maturing soybean cultivars that have improved seed holding and quality characteristics as well as soybean cyst nematode resistance.

8800139

THE UNIVERSITY OF TENNESSEE
INSTITUTE OF AGRICULTURE

APR 2 0 1988

Department of Plant and Soil Science
P. O. Box 1071
Knoxville, TN 37901-1071
(615) 974-7101

PLANT VARIETY PROTECTION OFFICE

Gentlemen:

Subject: Application for PVP
'TN 4-86' Soybean

As provided in section 83(a) of the Plant Variety Protection Act, 7 U.S.C. 2321, we request that the Certificate on the above variety be issued with a notation on the Certificate that the right to exclude others from selling, offering for sale, reproducing, importing or exporting the variety, or using it in producing a hybrid or different variety covered by this Certificate, is waived, except that this waiver shall not apply to breeders seed, foundation seed, labeling requirements, and blending limitations.

It has been agreed that the Certificate should be issued in the name of:

Tennessee Agricultural Experiment Station
P.O. Box 1071 (Morgan Hall), Knoxville, TN 37901

4-22-88
Date

D. O. Richardson
D. O. Richardson, Dean
Tennessee Agricultural Experiment Station

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